SLAMTEC

Athena 2.0

General Purpose Robot Platform

Model: N5M42-R3

Data Sheet

- ○ Small- to medium-sized robot development
- ○ Highly adaptable and scalable
- ○ Powerful optional functions

Learn more >

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I. Product Overview

1.1. Introduction

Developed by Slamtec, Athena 2.0 is a scalable and low-cost robot platform capable of meeting the needs of small-sized robot application development in areas such as smart patrol robots, container transportation robots, food delivery robots, and more.

The built-in SLAMCUBE 2 autonomous localization and navigation system enables path-finding and localization and navigation features, making Athena 2.0 capable of performing a variety of tasks across different commercial environments.

Cross-floor Moving, Light Deployment

Athena 2.0 is equipped with the latest version of Slamtec Smart Elevator Control 4.0, which allows it to adapt to different brands of elevators.

Through the latest version of Slamtec RoboStudio 2.0, Athena 2.0 supports integration of maps of multiple floors in one click. This improves the mapping efficiency and streamlines the deployment, thus enabling light deployment and fast use.

Multi-Sensor Data Fusion

Athena 2.0 uses multi-sensor data fusion technology. Fitted with equipment such as lidar, magnetic sensors, depth cameras, and bumper sensors, Athena 2.0 can implement autonomous mapping, localization, and navigation by flexibly responding to complex and ever-changing operational environments.

1.2 Basic Functions

1.2.1 Compact and Flexible

Athena 2.0 can move flexibly in a small size, thus meeting the needs of flexible moving and deployment-free scenarios. Thanks to its high obstacle passing stability, Athena 2.0 can easily pass narrow aisles and ramps.

1.2.2 Cross-floor Delivery and Light Deployment

Athena 2.0 is equipped with the latest version of Slamtec Smart Elevator Control 4.0, which allows it to adapt to different brands of elevators. When combined with RoboStudio 2.0, it can effectively enable light deployment and fast use.

Smart Elevator Control 4.0 addresses the challenges of bad weather, as well as unstable air pressure and communication in high-rise buildings. It provides accurate detection of elevator statuses along with call-control functionality. For hotel/restaurant delivery robots, it provides efficient and reliable solutions that help them autonomously navigate elevators in cross-floor scenarios.

1.2.3 Autonomous Mapping, Localization and Navigation

Athena 2.0 is built with the latest version of Slamtec SLAMCUBE 2 autonomous localization and navigation system which is more stable and can accommodate more interfaces. The structural design integrated three boxes into one, saving more space for chassis layout. With the path-finding, autonomous mapping and localization and navigation features, it helps robots figure out where they are, where they should go, and the best way to get there. It enables the robots to automatically find paths, locate, and move as needed without human assistance. In addition, Athena 2.0 supports multi-route patrol mode.

1.2.4 Rich Port Options and High Scalability

Athena 2.0 owns a completely open hardware and software platform and supports extended hardware. The rich port options eliminate the restrictions

in development platform and programming language, which makes Athena 2.0 universal for all types of host computer and support development of business logic applications through SLAMWARE SDK.

1.2.5 360° Protection and Smart Obstacle Avoidance

Athena 2.0 is fitted with equipment such as lidar, magnetic sensors, depth cameras, and bumper sensors, and adopts the multi-sensor fusion technology. It provides rapid and accurate identification of surrounding active environments, enabling smart obstacle avoidance and greatly reducing the chances of safety incidents. It also has fall-resistant and collision-resistant protection and emergency stop features, making the food delivery process fully protected, secure, and reliable.

1.2.6 Autonomous Recharging

The autonomous recharging feature ensures that Athena 2.0 will have enough power to complete the assigned tasks. Athena 2.0 will return automatically to its charging station when its remaining power falls below the set limits.
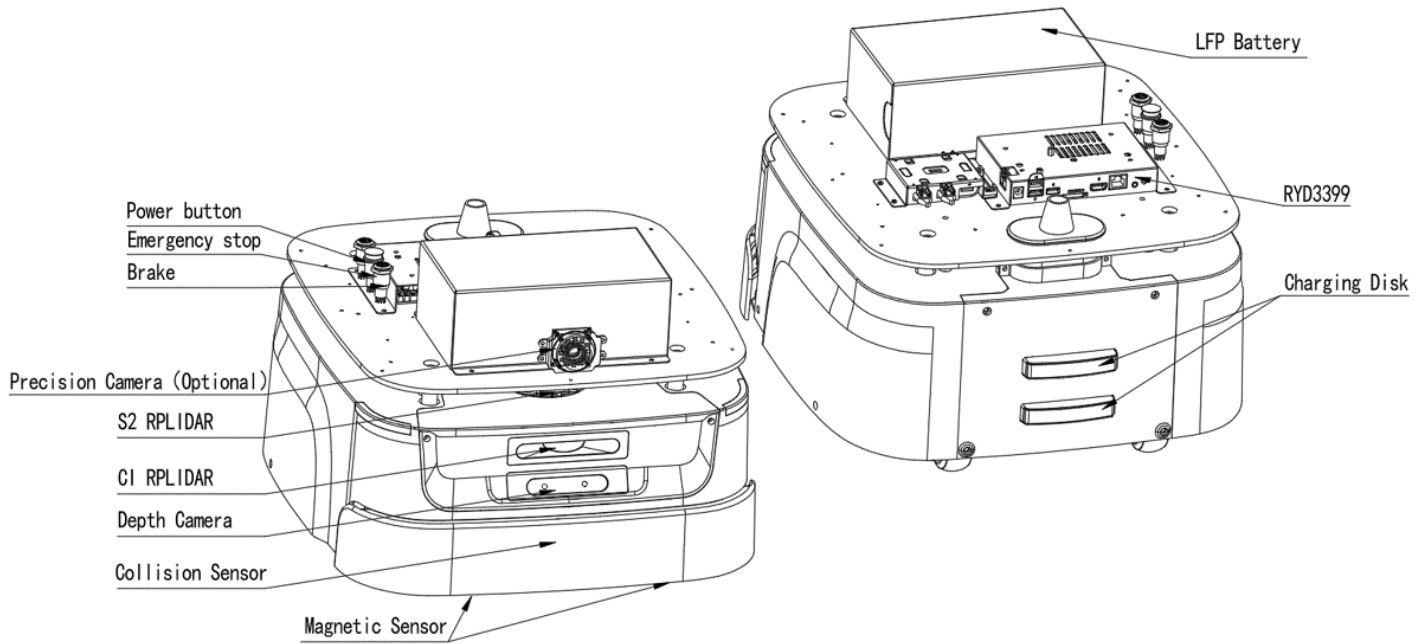
Special note: the automatic recharge function cannot be triggered only under the condition of that combined with upper machine with delivery and disinfection plug-in or customized models.

1.2.7 Multi-robot Scheduling & Collaboration

In scenarios such as large hotels, office buildings, and malls, multiple robots will avoid each other according to the task priority when they meet. The collaboration of multiple robots can further improve the delivery and guide efficiency.

Athena 2.0 supports local area network (LAN) and cloud platform collaborative operations, along with the dynamic adjustment of both speed and delivery routes in accordance with the environment to realize efficient, safe, and reliable multi-point delivery.

1.3 Exterior

Labels (left unit):
- Power button
- Emergency stop
- Brake
- Precision Camera (Optional)
- S2 RPLIDAR
- C1 RPLIDAR
- Depth Camera
- Collision Sensor
- Magnetic Sensor

Labels (right unit):
- LFP Battery
- RYD3399
- Charging Disk
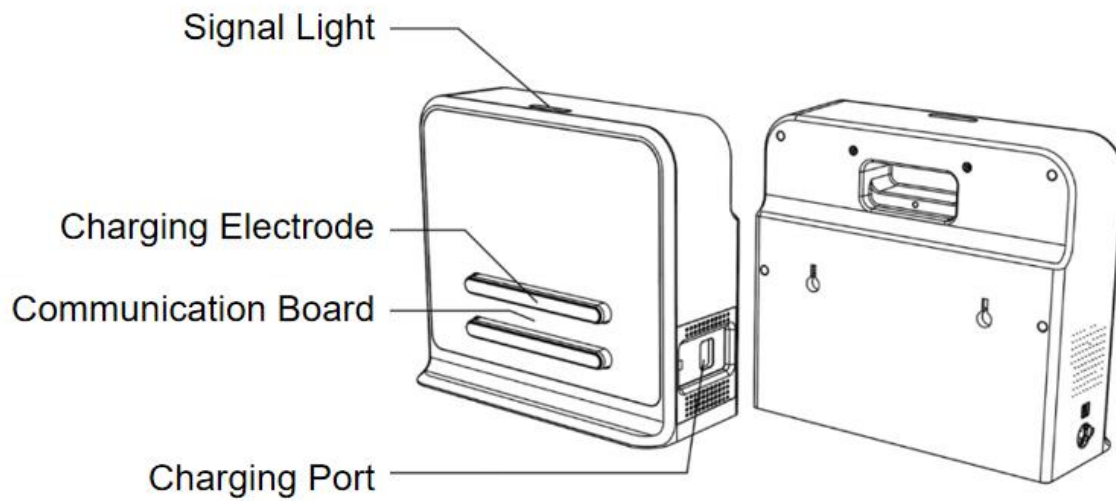
1.4 Charging Dock

Charging dock diagram

1.5 Product List

Name	Quantity	Notes
Athena 2.0 body	1	Athena 2.0 chassis body
Charging dock	1	Select environment for deployment before use.

II. Product Parameters

Model	Athena2.0 Robot Base	
Core Feature	SLAMWARE™ Localization and Navigation	
Dimension and Weight	Length × Width	429*460mm
	Height	237mm（excludes controller，battery）
	Net Weight	22kg
	Rated Load	40kg
	Max Load (Flat Concrete Surface)	60kg
Sensor Performance	**LIDAR** — Scanning Radius（90% reflectivity）	30m（Tof S2 LIDAR）
	Depth Camera — Quantity	Standard 1 unit
	Depth Camera — Detection Range	0.3m – 3.5m（Varies with lighting conditions）
	Depth Camera — Field of View (FOV)	H:75±3°；V:51±3°
	Low Obstacle & Cliff Detection — Quantity	1
	Low Obstacle & Cliff Detection — Minimum Detection	>3cm

	Sensor	Height for Low Obstacles	
	Magnetic Sensor (Default Disabled, Enabled when Needed)	Quantity	2
		Max detection range	35mm
	Bumper	Quantity	2
		Trigger Mode	Physical Collisions
		Detectable Minimum Force	8N
Mapping performance		Map Resolution	50mm
		Max Mapping Area	300m x300m
Motion Performance		Maximum Moving speed	1.2m/s
		Default Moving Speed	0.7m/s
		Maximum Moving Speed in Mapping Mode	0.6m/s

		Max Cross Slope	10° Slope: Max slope angle of chassis: 10°; Slope = 18% × Ramp; The height of the full-machine mass center is within 18 cm, and the safety ramp within 10°. (A 100% slope means a 45° ramp, whose height difference for 100 m is 100 m.)
		Vertical crossing height	20mm
		Horizontal crossing width	40mm
		Min Path Width (robot base)	550mm
Wheelset		Wheelset Parameters	6.5 Inch In-Wheel-Motor*2 2.5 Inch Industrial Universal Wheel*4
User Interface	**Hardware Interface**	Power Connector	DC 24V 10A
			DC 12V 2A
		HDMI	1*HDMI
		Audio	1 × 3.5mm headset socket;
			1 × LINE_MIC audio jack (co-lay with headset socket)

			1 × Dual-channel 5w/8Ω amplifier jack
	Network Interface	Ethernet	1*RJ45 Gigabit Ethernet port
		Wi-Fi	2.4GHz/5GHz
	Software Interface	SLAMWARE™	HTTP APIs support different programming languages and platforms, such as Windows, iOS, Android, and Linux
Ethernet		Wi-Fi	Network environment without authentication
		4G	Supports 4G SIM cards from domestic and international carriers (customized according to needs)
Battery and Capacity		Capacity Specification	20Ah（Lithium Iron Phosphate Battery）（Add-on）
		Stationary State	>19H（No-load，Ambient Temperature Environment）
		No-load Operating Time	>15H（No-load，Ambient Temperature Environment）
		Full-load Operating Time	8H(40KG，Ambient Temperature Environment）

	Charging Time	3~4 h（Standard Charging docker）
	Battery Life	Capacity decreases to 60% of the initial capacity after 2000 full charge and discharge cycles
Power Consumption	Standby Power Consumption	17W(No-load)
	Full-load Rated Power Consumption（40kg）	40W（Moving）
	Max Power Consumption with External Load	240W
	Rated Output	25.2V 2A
Noise	Operating Noise Level	≤60db
Operating Environment	Operating Temperature	0℃～40℃
	Transport and Storage Temperature	-25-+55℃
	Operating	20～90%rh（No

	Humidity	condensation)
	Operating Altitude	≤2000m

Charging station	
Size	360 mm*150 mm*320 mm (W*D*H)
Color	White
Rated input	100-240V 50/60 Hz 3A Max
Rated output	DC 25.5V 6A